CLAIMS

1. A Ⅲ-nitride compound semiconductor light emitting device including an n-type Ⅲ-nitride semiconductor layer, an active layer made of Ⅲ-nitride semiconductor and deposited over the n-type Ⅲ-nitride semiconductor layer, a p-type Ⅲ-nitride semiconductor layer deposited over the active layer made of Ⅲ-nitride semiconductor, and a p-side electrode deposited over the p-type Ⅲ-nitride semiconductor layer, the light emitting device comprising:

a first layer composed of a carbon-containing compound layer, the first layer interposed between the p-type Ⅲ-nitride semiconductor layer and the p-side electrode and grown on the p-type Ⅲ-nitride semiconductor layer; and

a second layer composed of a Ⅲ-nitride semiconductor layer, the second layer grown after the first layer is grown.

2. The Ⅲ-nitride compound semiconductor light emitting device of claim 1, wherein the second layer is composed of a plurality of islands.

3. The Ⅲ-nitride compound semiconductor light emitting device of claim 1, wherein the first layer is one selected from the group consisting of silicon carbide (Si_aC_b;a,b≠0), silicon carbon nitride ($Si_cC_dN_e$;c,d,e≠0) and carbon nitride (C_fN_g;f,g≠0).

4. The Ⅲ-nitride compound semiconductor light emitting device of claim 3, wherein the n-type Ⅲ-nitride semiconductor layer, the active layer made of Ⅲ-nitride semiconductor, the p-type Ⅲ-nitride semiconductor layer, and the second layer is composed of Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq x+y \leq 1$), and wherein the second layer is grown in a form of a plurality of islands due to different material characteristics between the first layer and the second layer.

5. The Ⅲ-nitride compound semiconductor light emitting device of claim 3, wherein the second layer is a p-type Ⅲ-nitride semiconductor layer.

6. The Ⅲ-nitride compound semiconductor light emitting device of claim 4, wherein the second layer is made of a p-type Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq x+y \leq 1$).

7. The Ⅲ-nitride compound semiconductor light emitting device of any one of claims 3 to 6, wherein the first layer is in a thickness of 5Å to 1000Å.

8. The Ⅲ-nitride compound semiconductor light emitting device of any one of claims 3 to 6, wherein the growth temperature of the first layer is 500℃ to 1,100℃.

9. The Ⅲ-nitride compound semiconductor light emitting device of any one of claims 3 to 6, wherein the first layer is a p-type carbon-containing compound layer.

10. The Ⅲ-nitride compound semiconductor light emitting device of any one of claims 3 to 6, wherein the first layer is an n-type carbon-containing compound layer.

11. The Ⅲ-nitride compound semiconductor light emitting device of any one of claims 3 to 6, wherein the first layer is formed as a nonuniform layer.

12. The Ⅲ-nitride compound semiconductor light emitting device of any one of claims 3 to 6, wherein the first layer is formed as a uniform layer.

13. The Ⅲ-nitride compound semiconductor light emitting device of any one of claims 3 to 6, wherein the second layer is in a thickness of 100Å to 5000Å.

14. The Ⅲ-nitride compound semiconductor light emitting device of claim 6, further comprising:

a third layer made of Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$,

$0 \leq x+y \leq 1$) and grown after the second layer is grown.

15. The Ⅲ-nitride compound semiconductor light emitting device of claim 14, wherein the third layer is in a thickness of 5Å to 200Å.

16. The Ⅲ-nitride compound semiconductor light emitting device of any one of claims 3 to 6, wherein the p-side electrode is made of any one selected from the group consisting of nickel, gold, silver, chrome, titanium, platinum, palladium, rhodium, iridium, aluminum, tin, ITO, indium, tantalum, copper, cobalt, iron, ruthenium, zirconium, tungsten, and molybdenum.

17. The Ⅲ-nitride compound semiconductor light emitting device of claim 3, wherein the silicon source for growing the first layer is any one selected from the group consisting of SiH_4, Si_2H_6, and DTBSi, the carbon source for growing the first layer is any one selected from the group consisting of CH_4, C_2H_4, and CBr_4, and the nitrogen source for growing the first layer is any one selected from the group consisting of NH_3, and Hydrazine-based source material.

18. A Ⅲ-nitride compound semiconductor light emitting device comprising:

a substrate 10;

a buffer layer 11 deposited on the substrate 10;

an n-type Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq x+y \leq 1$) layer 12 deposited on the buffer layer 11;

an Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq x+y \leq 1$) active layer 13 deposited on the n-type Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq x+y \leq 1$) layer 12;

an p-type Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq x+y \leq 1$) layer 14 deposited on the Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq x+y \leq 1$) active layer 13;

a first layer 20 made of one selected from the group consisting of silicon carbide (Si_aC_b;a,b≠0), silicon carbon nitride ($Si_cC_dN_e$;c,d,e≠0) and carbon nitride (C_fN_g ;f,g≠0), and grown on the p-type Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq x+y \leq 1$) layer 14;

a second layer 21 made of p-type Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq x+y \leq 1$), composed of a plurality of islands for increasing external quantum efficiency, and grown after the first layer 20 is grown;

a p-side electrode 17 deposited on the second layer; and,

an n-side electrode 18 deposited on the n-type Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq x+y \leq 1$) layer 12.

19. The Ⅲ-nitride compound semiconductor light emitting device of

claim 18, wherein the p-type Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq x+y \leq 1$) layer 14 and the second layer 21 made of p-type Al(x)Ga(y)In(1-x-y)N ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq x+y \leq 1$) are made of GaN.

20. The Ⅲ-nitride compound semiconductor light emitting device of claim 18, wherein the light emitting device is a light emitting diode.